AMENDMENTS TO THE CLAIMS

Please amend claim 12 as follows.

1. (Original) A thermally tuned filter, comprising:

a handle layer;

a dielectric layer positioned proximate to the handle layer;

a device layer positioned proximate to the handle layer, the device layer including an optical device; and

a pre-stressed membrane positioned proximate to the device layer, a tensile prestress of the pre-stressed membrane to increase a natural frequency of the thermally tuned filter.

2. (Original) The thermally tuned filter of claim 1 wherein a thickness of the pre-stressed membrane is less than 1 micrometer.

3. (Original) The thermally tuned filter of claim 1 wherein a thickness of the optical device is approximately 100 times more than a thickness of the pre-stressed membrane.

4. (Original) The thermally tuned filter of claim 1 wherein the pre-stressed membrane includes silicon nitride (Si_3N_4).

5. (Original) The thermally tuned filter of claim 1 wherein the tensile prestress is applied during formation of the pre-stressed membrane.

6. (Original) The thermally tuned filter of claim 1, further comprising a filter frame surrounding the thermally tuned filter, a difference between a temperature of the filter frame and a temperature of the optical device to change a stress of the pre-stressed membrane to change the natural frequency of the thermally tuned filter.

7. (Original) The thermally tuned filter of claim 1, further comprising a filter carrier mounted to the thermally tuned filter with a mounting material, the filter carrier and the mounting material to increase a tensile stress of the pre-stressed membrane to increase the natural frequency of the thermally tuned filter.

8. (Original) The thermally tuned filter of claim 1, further comprising a heater thermally coupled to the optical device to change a temperature of the optical device.

9. (Original) The thermally tuned filter of claim 8, further comprising a thermometer thermally coupled to the optical device to measure the temperature of the optical device.

10. (Original) A tunable laser, comprising:

a gain medium including a first output facet and a second output facet, the gain medium to emit an optical beam from the second output facet;

a reflector positioned in the first optical beam wherein the first output facet and the reflector define an optical cavity; and

a thermal tuner positioned in the first optical beam between the second output facet and the reflector, the thermal tuner comprising a thermally tuned filter including a pre-stressed membrane, a tensile prestress of the pre-stressed membrane to increase a natural frequency of the thermally tuned filter.

11. (Original) The tunable laser of claim 10, further comprising:

a platform thermally coupled to the thermal tuner; and

a thermo-electric cooler (TEC) thermally coupled to the platform to provide thermal control of the thermal tuner via the platform.

12. (Currently amended) The tunable laser of claim ~~10~~ 11, further comprising a filter frame surrounding the thermally tuned filter, a difference between a temperature of the filter frame and a temperature of a center of the thermally tuned filter to change a stress of the pre-stressed membrane to change the natural frequency of the thermally tuned filter.

13. (Original) The tunable laser of claim 12 wherein the temperature of the filter frame is adjusted by the TEC via the platform.

14. (Original) The tunable laser of claim 10, further comprising a filter carrier mounted to the thermally tuned filter with a mounting material, the filter carrier and the mounting

material to increase a tensile stress of the pre-stressed membrane to increase the natural frequency of the thermally tuned filter.

15. (Original) A thermally tuned filter, comprising:

a handle layer;

a dielectric layer positioned proximate to the handle layer;

a device layer positioned proximate to the handle layer, the device layer including an optical device; and

means for increasing a natural frequency of the thermally tuned filter.

16. (Original) The thermally tuned filter of claim 15 wherein the means for increasing the natural frequency includes a pre-stressed membrane.

17. (Original) The thermally tuned filter of claim 16, further comprising a filter frame surrounding the thermally tuned filter, a difference between a temperature of the filter frame and a temperature of the optical device to change a stress of the pre-stressed membrane to change the natural frequency of the thermally tuned filter.

18. (Original) The thermally tuned filter of claim 16, further comprising a filter carrier mounted to the thermally tuned filter with a mounting material, the filter carrier and the mounting material to increase a tensile stress of the pre-stressed membrane to increase the natural frequency of the thermally tuned filter.

19. (Previously presented) A method, comprising:

generating an optical beam by a gain medium of a tunable laser;

directing the optical beam through a thermally tuned filter of the tunable laser, wherein the thermally tuned filter includes a pre-stressed membrane including a prestress to increase a natural frequency of the thermally tuned filter;

outputting an optical signal from the tunable laser at a first wavelength; and

tuning the thermally tuned filter to tune the optical signal from the first wavelength to a second wavelength.

20. (Previously presented) The method of claim 19 wherein tuning the thermally tuned filter comprises heating an optical device within the thermally tuned filter.

21. (Previously presented) The method of claim 19, further comprising reducing a difference between a temperature of a filter frame surrounding the thermally tuned filter and a temperature of a center of the thermally tuned filter to increase the natural frequency of the thermally tuned filter.

22. (Previously presented) The method of claim 19 wherein the tunable laser comprises a filter carrier mounted to the thermally tuned filter with a mounting material, the filter carrier and the mounting material to increase a tensile stress of the pre-stressed membrane to increase the natural frequency of the thermally tuned filter.

23. (Original) A system, comprising:

a tunable laser to output an optical signal, a thermally tuned filter of the tunable laser comprising:

a handle layer;

a dielectric layer positioned proximate to the handle layer;

a device layer positioned proximate to the handle layer, the device layer including an optical device; and

a pre-stressed membrane positioned proximate to the device layer, a tensile prestress of the pre-stressed membrane to increase a natural frequency of the thermally tuned filter; and

an optical fiber optically coupled to the tunable laser to transmit the optical signal.

24. (Original) The system of claim 23 wherein the thermally tuned filter includes a filter frame surrounding the thermally tuned filter, a difference between a temperature of the filter frame and a temperature of the optical device to change a stress of the pre-stressed membrane to change the natural frequency of the thermally tuned filter.

25. (Original) The system of claim 23 wherein the thermally tuned filter includes a filter carrier mounted to the thermally tuned filter with a mounting material, the filter carrier and the mounting material to increase a tensile stress of the pre-stressed membrane to increase the natural frequency of the thermally tuned filter.

26. (Previously presented) A system, comprising:

a first tunable laser including a first thermally tuned filter, wherein the first thermally tuned filter includes a pre-stressed membrane, a tensile prestress of the pre-stressed membrane to increase a natural frequency of the first thermally tuned filter; and

a controller operatively coupled to the first tunable laser to provide tuning signals to the first tunable laser.

27. (Previously presented) The system of claim 26 wherein the first tunable laser includes a second thermally tuned filter optically coupled to the first thermally tuned filter, wherein the first thermally tuned filter and the second thermally tuned filter to tune the first tunable laser using Vernier tuning.

28. (Previously presented) The system of claim 26, further comprising a second tunable laser operatively coupled to the controller, the controller to provide tuning signals to the second tunable laser.

29. (Previously presented) The system of claim 28, further comprising an optical channel optically coupled to the first tunable laser and the second tunable laser, the optical channel to receive a first optical signal from the first tunable laser at a first wavelength and to receive a second optical signal from the second tunable laser at a second wavelength.